



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,375	02/17/2004	Michael Eugene Broach	50019.261US11/P05695P01	1831
23552	7590	02/24/2006		
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			EXAMINER HOLLINGTON, JERMELE M	
			ART UNIT 2829	PAPER NUMBER
DATE MAILED: 02/24/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/780,375

Applicant(s)

BROACH ET AL.

Examiner

Jermele M. Hollington

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 1-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 16-19 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 16-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Wilcox et al (5731731).

Regarding claims 16 and 19, Wilcox et al disclose [see Figs. 3 and 5] an apparatus and method for adjusting slope compensation in a switching regulator (switching regulator 300) that includes an inductor (inductor 138), the apparatus comprising a means for measuring (PWM control circuit 120) a parameter [referring to current] that is associated with the inductor (138); a means (voltage supply  $V_{in}$  into terminal 104) for providing a measurement signal ( $I_L$ ) that is associated with the measured parameter (current), a means (control logic 121) for adjusting a slope [via oscillator 122] that is associated with a ramp signal [via MOSFET circuit 134 and 335] in response to the measurement signal( $I_L$ ); and a means (drivers 132 and 333) for compensating a response that is associated with a control loop in the switching regulator (300) with the ramp signal [via 134 and 335] such that the control loop is responsive to changes in inductor (138) current slope via the measurement signal( $I_L$ ).

Regarding claim 17, Wilcox et al disclose adjusting the slope associated with the ramp signal [via 134 and 335] comprises at least one of changing a capacitance value (capacitor 131) that is associated with a ramp generator (MOSFET 134), and changing a charging current that is associated with the ramp generator circuit (MOSFET 134 and 335), wherein the slope of the ramp signal [via 134 and 335] is proportional to the ratio of the charging current to the capacitance value (131) such that the slope of the ramp signal is responsive to the measurement signal ( $I_L$ ) .

Regarding claims 18 and 20, Wilcox et al disclose further comprising: a means for monitoring (PWM control circuit 120) a reference signal that is related to an output voltage [via output circuit 330] of the switching regulator (300), a means (120) for dividing the reference signal with the measurement signal to provide a ratio, and a means (output control circuit 340) for changing the slope that is associated with the ramp signal in response to the ratio such that the slope of the ramp signal is responsive to the measurement signal ( $I_L$ ) and the output voltage.

Regarding claims 21 and 27, Wilcox et al disclose measuring the parameter (current) associated with the inductor (138) comprises: measuring (via control logic 121) a current slope associated with current flowing in the inductor (138), and wherein the parameter (current) corresponds to the current slope.

Regarding claims 22 and 28, Wilcox et al disclose wherein adjusting the slope associated with the ramp signal [134 and 335] corresponds to adjusting the slope associated with the ramp signal in response to the measured current slope according to at least one of: a matched slope, a fraction of a downward slope associated with the inductor

Art Unit: 2829

current (138), and a multiple of the downward slope associated with the inductor current (138).

Regarding claims 23-24 and 29-30, Wilcox et al disclose monitoring [via item 120] an output voltage [via item 330] associated with the switching regulator (300), and dynamically adjusting the slope that is associated with the ramp signal (via items 134 and 335) in response to the monitored output voltage [via item 330], wherein measuring the parameter (current) associated with the inductor (138) comprises measuring (item 121) a current slope associated with current flowing in the inductor (138) such that the parameter (current) corresponds to the current slope.

Regarding claims 25 and 31, Wilcox et al disclose means (item 120) for monitoring an output voltage [via item 330] associated with the switching regulator (300) to provide a first current signal, generating a second current signal as the measurement signal, summing [via comparator 129] the first current signal and the second current signal, and adjusting the slope associated with the ramp signal [via 134 and 335] in response to the sum of the first current signal and the second current signal.

Regarding claims 26 and 32, Wilcox et al disclose wherein adjusting the slope associated with the ramp signal [via 134 and 335] corresponds to an integration of the sum of the first current signal and the second current signal with a capacitor circuit (capacitor 131).

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tisinger et al (5079453) and Bewrrios et al (5315498) disclose a method and apparatus for slope compensation circuit.

***Election/Restrictions***

5. This application contains claims 1-15 drawn to an invention nonelected with traverse in Paper No. 20050729. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Base on the amendment by the applicants, the following is being applied.

6. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

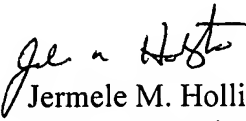
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jermele M. Hollington whose telephone number is (571) 272-1960. The examiner can normally be reached on M-F (9:00-4:30 EST) First Friday Off.

Art Unit: 2829

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (517) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jermele M. Hollington  
Primary Examiner  
Art Unit 2829

JMH  
February 21, 2006